WHAT IS CLAIMED IS

1. A positive-electrode material comprising a coated metal core of Sb, Bi, Cd, In, Pb, Ga, tin, or an alloy thereof.

2. A positive-electrode material according to Claim 1, wherein the coated metal core is tin.

3. A positive-electrode material according to Claim 1, wherein a coating of the coated metal core is a metal hydroxide or a metal oxyhydroxide which has been converted into its oxide.

4. A positive-electrode material according to Claim 3, wherein the coating is of tin, molybdenum, cerium, tungsten or antimony hydroxide or oxyhydroxide; wherein the hydroxide or oxyhydroxide has been converted into its oxide.

5. A positive-electrode material according to Claim 1, wherein the core has a single coating.

6. A positive-electrode material according to Claim 1, wherein the core has multiple coatings.

7. A process for the production of the positive-electrode material according to Claim 1, comprising

a) preparing a suspension or sol of the metal or alloy core in urotropin;

b) emulsifying the suspension with at least one C_5-C_{12}-hydrocarbon;

c) precipitating the emulsion onto the metal or alloy core; and

d) converting a metal hydroxide or an oxyhydroxide into the corresponding oxide by heating the system.

8. An electrochemical cell comprising a negative electrode, a positive electrode, a separator and an electrolyte, wherein the positive electrode comprises a positive-electrode material according to Claim 1.

9. An electrochemical cell with improved positive electrode cyclability comprising a positive-electrode material according to Claim 1, wherein the coated metal core has defined metal-oxide layers.

10. An electrochemical cell, a battery, or a secondary lithium battery comprising a positive electrode material according to Claim 1.

11. A positive electrode material according to Claim 1, wherein the coated metal cores comprise secondary particles having a diameter of about 0.01μm - about 10μm.

12. A positive electrode material according to Claim 11, further comprising secondary particles having a diameter of less than about 10 microns.

13. A process for the production of the positive-electrode material according to Claim 1, comprising preparing a suspension or sol of the metal or alloy core in urotropin.

14. An electrochemical cell according to Claim 8, wherein the negative electrode comprises an alkali metal borate of the formula:

$$Li^{+}\ B^{-}(OR^{1})_{m}(OR^{2})_{p}$$

wherein
m and p are 0, 1, 2, 3 or 4, where m + p = 4, and
R^1 and R^2 are, independently, identical or different,

are optionally bonded directly to one another via a single or double bond,

are each, individually or together, an aromatic or aliphatic carboxylic, dicarboxylic or sulfonic acid radical, or

are each, individually or together, an aromatic ring of a phenyl, naphthyl, anthracenyl or phenanthrenyl group, which may be unsubstituted or mono- to tetrasubstituted by A or Hal, or

are each, individually or together, a heterocyclic aromatic ring of a pyridyl, pyrazyl or bipyridyl group, which may be unsubstituted or mono- to trisubstituted by A or Hal, or

are each, individually or together, an aromatic hydroxy acid of an aromatic hydroxycarboxylic acid or an aromatic hydroxysulfonic acid group, which may be unsubstituted or mono- to tetrasubstituted by A or Hal,

and

Hal is F, Cl or Br

and

A is alkyl having 1 to 6 carbon atoms, which may be mono- to trihalogenated.

15. An electrochemical cell according to Claim 8, wherein the negative electrode comprises an alkali metal alkoxide of the formula:

$Li^+ OR^-$

in which R

is an aromatic or aliphatic carboxylic, dicarboxylic or sulfonic acid radical, or

is an aromatic ring of a phenyl, naphthyl, anthracenyl or phenanthrenyl group, which may be unsubstituted or mono- to tetrasubstituted by A or Hal, or

is a heterocyclic aromatic ring of a pyridyl, pyrazyl or bipyridyl group, which may be unsubstituted or mono- to trisubstituted by A or Hal, or

is an aromatic hydroxy acid of an aromatic hydroxycarboxylic acid of aromatic hydroxysulfonic acid group, which may be unsubstituted or mono- to tetrasubstituted by A or Hal,

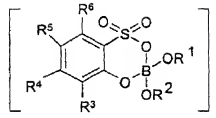
and

Hal is F, Cl or Br

and

A is alkyl having 1 to 6 carbon atoms, which may be mono- to trihalogenated.

16. An electrochemical cell according to Claim 8, wherein the negative electrode comprises a lithium salt of formula:



wherein

R^1 and R^2 are, independently, identical or different, are optionally bonded directly to one another via a single or double bond, and are each, individually or together, an aromatic ring of a phenyl, naphthyl, anthracenyl or phenanthrenyl group, which may be unsubstituted or mono- to hexasubstituted by an alkyl group, an alkoxy group or halogen.